## REMARKS

This application has been reviewed in light of the Office Action dated December 3, 2004. Claims 12-17 and 30-39 are pending. Claims 12, 13, 15, 16, and 17 have been amended to define more clearly what Applicants regard as their invention, and Claims 30, 31, 34 and 36 have been amended so that they are in independent form. Non-substantive changes also have been made to Claims 14, 32, and 38, merely to improve their form. No change in scope is either intended or believed effected by at least these latter changes, which have not been made for purposes relating to patentability. Claims 12-17, 30, 31, 34 and 36 are in independent form. Favorable reconsideration is respectfully requested.

Applicants would like to thank the Examiner for allowing Claim 14 and acknowledging that Claims 30, 31, 34 and 36 (which were objected to for being dependent on a rejected base claim) contain patentable subject matter. Applicants have now rewritten Claims 30, 31, 34 and 36 in independent form, incorporating the limitations of their respective base claims and any intervening claims from which they respectively depend. Claims 30, 31, 34 and 36 are now believed to be patentable and in condition for allowance.

Claims 12 and 15 have been objected to for being informal. As part of the amendments made to Claim 12, Applicants have amended the word "receiver" in line 3 to now read --receive--, and as part of the amendments made to Claim 15, immediately before the word "preceding", "n" has been changed to --a--. Accordingly, Applicants respectfully request that the objections to Claims 12 and 15 be withdrawn.

Claim 12 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 6,356,367 *(DeCusatis et al.)*; Claims 13, 16, 17, and 37 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,060,224 *(Konishi)*; and Claims 13, 15, 32, 33, 35, and 37-39 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 5,717,795 *(Sharma et al.)*.

The rejection of independent Claim 12 over *DeCusatis et al.* will first be addressed.

Claim 12, as amended, is directed to an optical line terminal, containing a line interface, a port side interface, and a transponder. The line interface has a line side transmit port to transmit an optical signal and a line side receive port to receive an optical signal. The port side interface has a port side transmit port to transmit an optical signal and a port side receive port to receive an optical signal. The transponder is connected to the line side transmit port and the line side receive port of the line side interface, and also is connected to the port side transmit port and port side receive port of the port side interface. The transponder includes a loopback mechanism to perform at least one of looping back a received optical signal at the line side receive port to the line side transmit port and looping back a received optical signal at the port side receive port to the port side transmit port, without converting any received optical signal to electrical form during looping back.

One of the notable features of amended Claim 12 is that the optical line terminal does not require conversion of the optical signal to electrical form during the looping back.

*DeCusatis et al.* discloses in Fig. 4, an optical repeater 20 that "includes an optical receiver (RX1) 22a and a laser transmitter (TX1) 22b at one end and an optical receiver (RX2) 24a and laser transmitter (TX2) 24b at the opposite end. Each receiver receives optical data from one link of a respective duplex link, and sends converted electrical signals to a respective open fiber control circuit..." (Emphasis added)(See col. 5, lines 52-58).

*DeCusatis et al.* requires such electro-optical conversion, as explained above. The optical line terminal of Claim 12, on the other hand, does not require conversion of the optical signal to electrical form. Nothing in *DeCusatis et al.* is seen to teach or suggest an optical line terminal having these features of Claim 12. As such, Claim 12 is believed to be clearly patentable over *DeCusatis et al.*

Claim 13 is directed to an optical node interconnected in an optical communication system having the optical node and plural other optical nodes. The optical node is comprised of a line side receive interface to receive one or more of a plurality of optical wavelengths, including a test optical wavelength, from one of the other nodes that originated the test optical wavelength; a line side transmit interface to transmit one or more of the plurality of optical wavelengths, including the test optical wavelength; and a loopback mechanism to perform looping back of the one or more of the plurality of optical wavelengths, including the test optical wavelength, received at the line side receive interface to the line side transmit interface without converting the optical wavelengths, (including the test optical wavelength) to electrical form.

A notable aspect of amended Claim 13 is that the loopback mechanism loops back one or more of the plurality of optical wavelengths, including the test optical wavelength, to the line side transmit interface without converting the optical wavelengths, including the test optical wavelength, to electrical form.

Column 4, lines 36-54 of *Konishi* describes the operation of the optical switch shown in Fig. 4, where an optical signal is input to optical switch 71a and forwarded to optical transmitting and receiving circuit 75a for conversion to an electrical signal. When an abnormality is detected by LAN interface 74a due to a malfunction of node 70a, or other causes, LAN interface 74a switches optical switch 71a from the transmitting and receiving mode to a self return mode so that line L4 is by passed through node 70a. In Fig. 5, *Konishi* shows a flow chart of a self checking operation performed by LAN interface 74a. Column 4, lines 20-49 further states,

> [I]n step F1, an internal return command is set in serial-parallel converter 76a through internal bus 73a. In step F2, test data is transferred to serial-parallel converter 76a. The test data is returned at serial-parallel converter 76a, and is then input to LAN interface 74a as return data. The operation state of serial-parallel converter 76a can be checked by the return data corresponding to the test data.
>
> In step F3, an internal return command is set in optical switch 71a by switching control signal S. More specifically, optical switch 71a is set in the self return mode. In step F4, the internal return command set in serial-parallel converter 76a in step F1 is reset. In step F5, test data output from LAN interface 74a is converted to serial data by serial-parallel converter 76a, and is converted to an optical signal by optical transmitting and receiving circuit 75a. Thereafter, the optical signal is input to optical switch 71a. The optical signal input to optical switch 71a is returned since the optical switch 71a is set in the self return mode, and is input to

> optical transmitting and receiving circuit 75a. The optical signal input to optical transmitting and receiving circuit 75a is converted to an electric signal (serial data), and is then converted to parallel data by serial-parallel converter 76a. Thereafter, the parallel data is input to LAN interface 74a. Thus, the operation state of optical transmitting and receiving circuit 75a can be checked based on the presence/absence of return data corresponding to test data and on the state of the return data (self-checking test).

*Konishi* does not, however, disclose or suggest the above noted feature of Claim 13, wherein the loopback mechanism loops back one or more of the plurality of optical wavelengths, including the test optical wavelength, received at the line side receive interface, to the line side transmit interface, without converting the optical wavelengths, including the test optical wavelength, to electrical form. Therefore, Claim 13 is deemed patentable over *Konishi*.

Independent Claims 16 and 17, have features similar in many respects to those of Claim 13, wherein an optical signal, including a test optical signal, from an originating node, is loopbacked back by an optical terminal without being converted to electrical form. As such, Claims 16 and 17 also are believed to be patentable over *Konishi*.

The rejection of Claims 13 and 15 over *Sharma et al.* will now be addressed.

The teachings of Claim 13 were described above. Briefly, Claim 13, recites, in part, a loopback mechanism that loops back one or more of a plurality of optical wavelengths, including a test optical wavelength, received at a line side receive interface, to a line side transmit interface, without converting the optical wavelengths to electrical form.

Claim 15 is directed to an optical network comprising n optical nodes, optical fibers and an optical loop-back circuit, where "n" is an integer. The optical nodes include a source node to provide an optical signal that includes a test optical signal, and a destination node to receive the optical signal that includes the test optical signal. The optical fibers optically connect the n nodes, and carry the optical signal including the test optical signal from the source node to the destination node via intermediate nodes. The optical loop-back circuit loops back the optical signal including the test optical signal at any one of the nodes to a preceding node without converting the optical signal including the test optical signal to an electrical signal.

The Office Action cites *Sharma et al.*, Figs. 15, 27 and 28, as disclosing an optical network with protection switching. Protection switches A18, A19, C11, and C12 are used to selectively connect main trunk line B1 and protection line B2 to the input/output portions of the nodes A1 and C1 to Cn. One particular embodiment, shown in Fig. 28C, depicts the protection switches in a loopback configuration.

However, nothing has been found in *Sharma et al.* that would teach or suggest a configuration in which a loopback mechanism loops back one or more of the plurality of optical wavelengths, including the test optical wavelength, received at the line side receive interface, to the line side transmit interface, without converting the optical wavelengths to electrical form, as set forth in Claim 13. As such, Claim 13 is deemed patentable over *Sharma et al.*

Claim 15 is similar in many relevant respects to Claim 13, and also is believed to be patentable over *Sharma et al.* for the same reasons.

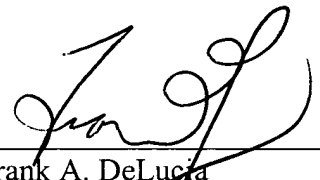
A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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